# Machine Tool Blue Book

JULY, 1931

TWENTY-SIXTH YEAR



## WELDING WIRE PRODUCTS

have become leaders in their respective fields of a distinctive quality which has been developed by a organization of engineers who have pioneered many welding trails through plants and machine shops.

Koro Products are exceptionally adapted for general railroad and machine repair welding such as flue welding, building up guides and slides, also for general machine shop and boiler work repair.

Whether you have one or many welding problems, there's an electrode in the "Koro" line of welding wire to fit your requirments.

Fill out and mail coupon below for valuable chart of Koro products.

### KORO CORPORATION 3021 Madison St., BELLWOOD, ILL.

,,										-	-	-	-		7
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KORO CORPORATION															

Gentlemen: Without obligation please mail me chart of Koro Welding Wire Products.

Name Address
City State

### · HANNIFIN ·



Model B-2
HANNIFIN
Arbot Press equipped with a
special "HANNIFIN Designed "faxture for "pressing-in "ball bearing spring
shackle pina.

#### HANNIFIN PRODUCTS

Standard Air Operated Chucks Special Air Operated Chucking Devices Air Operated Clamping

Devices
Air Operated
Air Operated
Air Operated
Air Operated Presses
Air Operated Jigs and
Fixture

Rotating Double-Acting Air Cylinders Stationary Double-Acting Air Cylinders

Acting Air Cylinders
Air Operating Valves
Air Control Valves for
all Purposes

### Air Operated Arbor Presses

Fast, Productive, Economical on a Wide Range of Operations

THE HANNIFIN line of Arbor Presses assures greater production at lower cost on "pressingin" bearings, press - assembling, broaching, or similar operations.

HANNIFIN Air Operated Arbor Presses are available in fifty standard sizes to deliver pressures ranging from 600 lbs. to 48.000 lbs.

Open-hearth steel is used throughout in building these presses—a far more durable and superior metal than the semi-steel ordinarily used. Alemite lubrication to all wearing parts is provided, insuring maximum operating efficiency at all times. Special fixtures for out-of-the-ordinary operations can be designed and furnished by HANNIFIN engineers.

Write for Catalog No. 11
giving full details

### HANNIFIN Manufacturing Co.

621 So. Kolmar Ave. CHICAGO, ILL.

# Machine Tool Blue Book

Selected Circulation 25,500 Monthly

JULY, 1931

TWENTY-SIXTH YEAR

### Are You Thinking of Fall and Winter Sales?

Manufacturers of metal products are planning now for the betterment of their shop equipment. In the aggregate they have millions of dollars worth of machinery which should be replaced.

Even if their purse strings are tied in a hard knot right now, many of those knots will be loosened by Fall or Winter.

While machine tool users are planning what to buy, you should be advertising what you have to sell. They want to know whether your machines fit in with their plans, and you want them to know.

But how can they know in time unless you tell them while their plans are forming?

This publication is ideal for the purpose of telling them what you make and what it will do. It covers the cream of the metal-working trade from coast to coast and, with its extremely moderate rates, it gives the most good advertising per dollar of cost.

Like the man running for the train, you cannot afford to miss it. Use it for your Summer message to the Fall and Winter buyers. Don't miss this important train before their plans are all made.

Ask the publishers. No obligation.

Published By

Hitchcock Publishing Co.
508 S. Dearborn St., Chicago, Ill.

Consult the Classified Finding Index for your requirements

*mmn* 

# Threading at 3000 R. P. M.

These rods are being threaded with a No. 8-32 thread 5-16" long, at an average production of 1400 pieces per hour on our standard High Speed Tapping Machine.



How about your threaded work?

Leland-Gifford Company, - Worcester, Mass., U.S.A.

BRANCHES
BOSTON CHICAGO CLEVELAND
DETROIT NEW YORK
PHTTSBURGH ROCHESTER

AGENTS

Hendrie & Bolthoff

F. E. Satterine Company

Smith Booth Uniter Co.,

F. E. Sutterine Company Minneapolis Smith Booth Usher Co., Los Angeles Herberts-Moore Machinery Co., San Francisco E. F. Barber Machinery Co. Toronto

### LELAND GIFFORD



### Can You Do This?

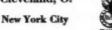
A machine company in Connecticut using a 13/16" NAMCO "DR" Die Head on a sample connector of malleable iron, threaded from the rough in a drill press cutting a 1/2" straight pipe thread, is machining 1400 per hour. The machine is operated by hand and this customer is getting 25,000 pieces per chaser grind. The cutting agent used is a soluble oil.

NAMCO Circular Chasers are giving similar performance throughout the country, Can you get production such as this from the chasers you are now using?

Bulletin TD-B gives complete NAMCO Circular Chaser Facts

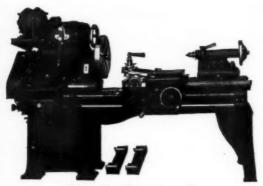
### The National Acme Co.

Cleveland, O.



Windsor, Vt.

Detroit-Chicago



## Newly Designed Removable Block Gap Lathe

2 sizes, 16/25' and 18/27' swing. . Any length Bed.

Belt Drive, All Geared Head Motor Drive or Belt Drive with Motorized Countershaft.

Especially suited for Repair Shops and Garages. Removable Bridge made in 2 sections.

Standard Equipment includes

CABINET LEG under headstock
DOUBLE BACK GEARS
QUICK CHANGE GEAR BOX
CHASING DIAL
LEAD SCREW AND FEED ROD
DOUBLE BRIDGE BLOCKS

Also power cross feed, graduated compound rest and cross feed, steady rest, face and driver plates, tool post, centers, wrenches and double friction countershaft.

#### SMALL INVESTMENT. LOW COST OF UP-KEEP.

Write for "LN GAP" Descriptive Circular

The Rahn-Larmon Co. 2941 Spring Grove Ave., Cincinnati, O.



-16-speed headstock.

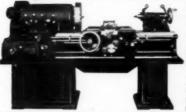
Timkenized quick-change gear box.

Built-in leadscrew reverse.

-All bearings in apron are of the anti-friction type. Apron feeds controlled by eccentric ball levers. End gear train mounted on anti-friction bearings.

Standardized flanged spindle nose.

Quick clamping tailstock.



Anti-friction bearings throughout - 55 in all. They eliminate wear and give unusual accuracy enabling the operator to set the limits as close as he desires.

> 10-Improved lubrication. Head-stock is oiled once each year, quickchange gear box oiled once a week. apron oiled weekly. Bulletin 143 gives the facts. Write for a copy.

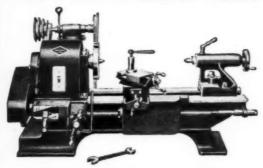
The Monarch Machine Tool Co., Sidney, Ohio New York Sales Office: 857 Graybar Bldg.

## onarch lathes

Helical Gears - Timben Bearings COOTHER .. QUIETER .. MORE POWERFU THE IMPROVED

## ARTISAN

Bench Lathe



#### Handles a Great Variety of Work

Screw Cutting Quick Change "Y" Belt Drive 11° Swing 18° between centers 8 Spindle Speeds Back Geared V<sub>3</sub> H. P. Motor— Resersible Type Throad Cutting Dial THE IMPROVED ARTISAN BENCH LATHE is sturdily built and will handle work of greater size than any other lathe of equal swing and length. Bar stock or automobile axles up to 15/16 to diameter can be passed through the spindle for taper or threading thus passenger car axles over 30 tong can be machined. Cuts threads 8 to 224 to inch.

Write for Complete Information and Price

DEALERS WANTED

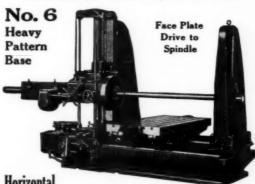
#### **ROCKY MOUNTAIN STEEL PRODUCTS**

1358 Wall Street,

Los Angeles, California

Also Manufacturers of the "Improved ARTISAN" Master Lathe, floor type model, 36" between centers, swings 16" in gap.

### The New Improved DEFIANCE



Horizontal

### Boring, Milling, Drilling and Tapping Machine

The Defiance Line of Horizontal Boring Mills embodies many special features including independent rapid traverse to head and platen in all directions, moving 84" per minute; thoroughly enclosed head; forced feed lubrication; centralized control; unit construction of head, feed and speed boxes, and many more efficient aids to production. Simplicity, great strength and ample power enable you to handle a wide range of work with profit.

Write for the descriptive folder, or for the complete Catalog of "The Defiance Line" of Cylinder Boring Machines, Heavy Service Drilling Machines. Rail Drills, Horizontal and Vertical Multiple Drilling Machines, Multiple Tapping Machines and Valve Grinding Machines.

#### The Defiance Machine Works Defiance, Ohio

Designers and Builders of Precision-Production Machine Tools and Special Woodworking Machinery

# Type A. C. "STANDARD" Spot Welder



#### Positively the Lowest Priced Spot Welder Built, Quality Considered

7½ K. V. A. 2\* horns with water cooled points. 6\* and 12\* throat Swivel treadle 6 step regulation

Send samples or blue prints for quotation on special equipment. We can save you money.

The Lenney Machine & Manufacturing Company Warren, Ohio



The Four

### BIG

Reasons for Conway Preference

- 1. Easy Engagement
- 2. Instant Release
- 3. Dragfree Idling
- 4. Abundance of Power

Ask for additional information on the

### CONWAY CLUTCH

Catalogs on request

THE CONWAY CLUTCH CO.

1541 Queen City Ave., Cincinnati, Ohio

"The Conway Disc is a splendid Clutch"

# WORTHY OF YOUR HIRE

0

#### Tool Post or Center Grinders

For internal grinding and grinding of centers, cutters, dies, reamers, etc., in lathe, milling machine, shaper or planer. Sizes 6° and 6° wheels. ¼-½ H. P.



Drills-Grinders-Buffers-Polishers



S

#### Combination Grinders and Buffers

G. E. Motors and SKF ball bearings. High grade nickel steel shaft. Made in four sizes. 1/2, 1, 2, and 3 H. P.

The 2 and 3 H. P. are fitted with Push Button Control. Also made in Bench Type.

Catalog on request

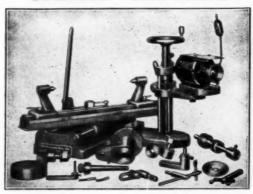
The Standard Electrical Tool Co.

1952 West 8th St.,

Cincinnati, Ohio

Standardize with Standard Tools

### A New Universal Tool Grinder—The No. 2



#### Just the Grinder You've Been Looking For!

SPEED UP your cutter grinding with a SURFACER No. 2 Universal Cutter Grinder. It is extremely simple to operate and is quicky set up for any cutting tool. It has a large capacity, centers are adjustable to 14½°; cutters 6° diameter, 9° long; universal attachment, vertically, grinds saws and cutters to 16° diameter.

Your tool crib attendant can sharpen all types of cutting tools on this grinder, converting his non-productive time to tool maintenance. The grinder is portable and therefore takes up no valuable floor space.

The low cost of the No. 2 Cutter enables it to pay for itself in a very short time. Every shop can afford to install it as it sells for many times less than other grinders that do the same precision work. It will pay you to investigate the SURFACER No. 2 Grinder.

If Your Machinery Dealer Cannot Supply You, Write Us
Today for Complete Information and Prices

The Surfacer Manufacturing Co. 2454 Irving Park Bivd., CHICAGO, ILL.

# "SUPERIOR" Hand Milling Machine



No. 1

WAS DESIGNED to meet the demand for a high grade well built machine to cover a great variety of work within the range of a hand miller.

CONSTRUCTION and WORKMAN. SHIP is of the very best possible. The head and knee are mounted on long narrow wave accurately fitted with adjustable taper gibs which insures rigidity and long life together with perfect alignment and ease of operation, Friction countershaft is built into the machine so it can be run directly from line shaft or from motor.

#### In a Class by Itself

THE SUPERIOR is not competitive with other Hand Millers which are now on the market, but is in a class by itself, as is proven by the large number already in use, and the many repeat orders coming from shops having used them for years.

Descriptive Literature Gladly Sent on Request

We are also Designers and Manufacturers of Special Machinery, Tools, Dies, etc., as well as of Experimental and Model Work.

Superior Machine & Engineering Co.
1920 Ferry Park, 1-1 Detroit, Mich.

## HAMMOND

GRINDERS& POLISHERS



Hammond Machinery Builders

### Right Angle Sanding and Polishing Attachment





Large surfaces are quickly polished, sanded or ground with small tools by means of the light Kellerflex Right Angle Attachment. It is easy to handle—avoids strain on the operator—permits rapid changing of discs.



This attachment is built for long life. Timken roller bearing equipped throughout. The spiral bevel gears are made of special steel, hardened. All wearing parts are hardened and ground. The housing is aluminum. The hand piece and handle, steel—nickel plated. Whole unit is highly polished.



Note the discs at the left: top—felt pad, steel-disc backed—furnished 6½°, 8½° dia.; center—abrasive disc—supplied fine, medium and coarse, 7° and 9°; bottom—lamb's wool polishing head—furnished 7° and 9°.

Write for further details

Keller Mechanical Engineering Corp. SEA Washington St. KYE Brooklyn, N. Y.

### Grand Rapids Universal Cutter and Tool Grinders



#### **Sharp Tools Cut Production Costs**

Good tool room equipment keeps your expensive production machinery going at top speed. The Grand Rapids No. 4 Universal Grinder is heavy and powerful, with a remarkable wide range of work. Wet or dry cutting jobs are easily accomodated with the complete attachments furnished. Motor or belt drive, with or without automatic feed. Large table, ease and rapidity of operation, long life and low maintenance are some of the factors guaranteeing efficient operation.

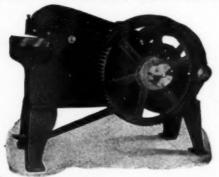
We make a complete line of Grinders—Send for details

### GAILIMHEYER AND LIVINGSTON CO.

342 Straight Ave., S. W.,

Grand Rapids, Mich.

# = BELOIT = ALLIGATOR SHEARS



#### Insure "Satisfactory Service"

If you are looking for Alligator Shears to give real service—get the BELOIT. Such seems to be the consensus of opinion judging from the following excerpts, (names gladly furnished on request).

#### From Minnesota:

"The No. 46 Alligator Shear has given very satisfactory service and would estimate that this shear has cut up about 15 tons of bar tool stead."

#### From Ohio:

"the No. 46 . . . is giving very satisfactory service ".

#### From Canada:

"Regarding the two Alligator Shears shipped us.,, we are pleased to advise the machines are giving the best of satisfaction."

Join our Club of Satisfied Users! Receive the benefits of real satisfaction expressed in reduced operating costs and other savings.

Write for Your Copy of the BELOIT Catalog

HENDLEY & WHITTEMORE CO. 100 So. State St., BELOIT, WIS-

PUNCHES -- SHEARS -- BENDING POLLS

### A Portable GRINDER

which will withstand continuous



I H.P., 3 Phase, 220 or 440 volts. 3500 R.P.M. at 40 cycle. 40° C. Rise Constant Duty. Nine motor leads are brought out in switch box for ready connection to either 220 or 440 volts. Strong Flexible Shaft. Light Metallic Handle equipped with Standard Ball Bearings. Equipped with 8 "xi" grinding wheel. Diameter of spindle at wheel, ½". Net weight of Grinder, 155 lbs. Shipping weight, 200 lbs. Can be furnished in single phase 110 or 220 volts A.C. and 110 or 220 volts D.C.

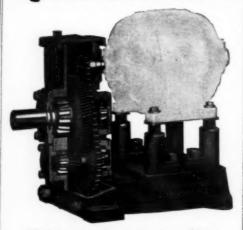
A Sales Representation Is Open in a Few Localities

### STOODY COMPANY

MANUFACTURERS

WHITTIER, CALIFORNIA

### The Cullman Speed Reducers



Made in sizes for motors from 1/8 to 15 H. P. Ratio 2.5 to 1 to 1014 to 1. Timken Roller Bearings and Helical Gears all moving parts operate in a bath of oil.

Cullman Wheel Company
1359 Aitgeld St., Chicago, 111.

Sprockets-Lathe, Shaper and Milling Machine Drives

# Your Profits Depend on LOW COSTS!

Your choice of grinders deserves your most careful judgment because they largely determine your margin of profit. The U. S. Model 10 Grinder, for instance, is showing the greatest economy in many plants year after year—and is most dependable in hardest service—for many reasons:

Heavy duty SKF Ball Bearings. Large chrome-manganese steel spindle. Powerful universal motor (for A. C. or D. C.). Rugged, vibrationless construction, etc.



#### MODEL 10 GRINDER

When you specify U. S., you can be sure your grinders are built in accordance with the Safety Code of the American Engineering Standards Committee, Bulletin No. 436 of the United States Bureau of Labor Statistics!



Complete information and catalog free on request by your distributor. Or write direct.

The United States Electrical Tool Co. 2461 W. Sixth St., Dept. D. Cincinnati, Ohio

Canadian Division-MAPLE LEAF ELECTRIC TOOLS, Ltd.-Toronto

#### Without a PEDRICK

### Portable Milling Machine

You Often Pay Its Price In Delay On One Job



To appreciate its value just add the savings you could effect in a year by taking this handy, ever-ready tool to the job instead of bringing the job to the tool, then subtract the price. Result—net earning power.

You need this Pedrick Miller to do those big jobs that your standard machines cannot handle.

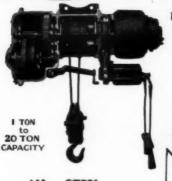
Catalogue explains all its various operations a comprehensive book of reference and key to manifold savings. Your copy is waiting shall we send it now?

#### Pedrick Tool & Machine Co.

Headquarters for Portable Machine Tools Boring Bars, Crank Pin Turners, Pipe Bonders, etc.

3644 N. Lawrence St., Philadelphia, Pa.

### BOX FER ELECTRIC HOIST



MOST RUGGED AND ECONOMICAL HOIST BUILT

500 lb.

CAPACITY

ALL STEEL SUSPENSION 92 % MECHANICAL EFFICIENCY

## BOX TYPE HEAD CRANE

ROOM
LIFTS ITS LOAD WITHIN ISIN OF CEILING
HEAVY DUTY ELECTRIC AND HAND TRAVELING CRANES
MADE IN EVERY SIZE AND TYPE FOR EVERY DUTY
WRITE FOR CATALOG

BOX CRANE & HOIST CORPORATION

2234 EAST ONTARIO ST., PHILADELPHIA, PA. REPRESENTATIVES IN PRINCIPAL CITIES.

## MARVEL

No. 8 Metal Band Saw





Blade Pressure in Pounds

RMSTRONG - BLUM
341 N. Francisco Ave.,

## MARVEL

#### High-Speed-Edge Hack Saw Blades

THE MARVEL will do at least 6 to 10 times the amount of cutting that can be obtained from ordinary tungsten-alloy blades; will in-

crease the hourly production of any hack saw machine; cuts cleaner and straighter; and positively cannot be broken in use from any cause—not even by accident. Write for circular with complete details and unconditional guarantee.

> Special Alloy Heat Treated Back-for greater strength

DIFFERENT from all others!

Patented Electric Weldfused integral

Genuine High Speed Steel Cutting Edgefor greater cutting efficiency and longer life.

MANUFACTURING CO. CHICAGO, ILLINOIS

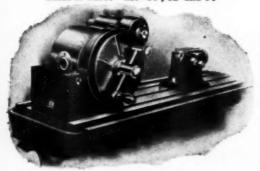
### STEVENS DIVIDING HEADS

(FORMERLY GARVIN)

PLAIN TYPE-Made in Two Sizes-101 and 111



DOUBLE GEARED-BARREL TYPE
Made in Three Sizes-10", 12" and 14"



#### Special Circular Sent on Request Manufacturers Of

Double end horizontal drills, milling machines and attachments, milling machine vises, dividing heads, index centers, single and multiple spindle, hand screw machines, cutter grinders, acrew slotters, hand lathes, collet chucks, oval chucks, rotary tables, hex square milling fixtures, air devices, oil pumps.

Repairs on GARVIN Machines of Our Manufacture

JOHN B. STEVENS INC. 306 Hudson St. New York City

# HARDINGE

& COLLETS %



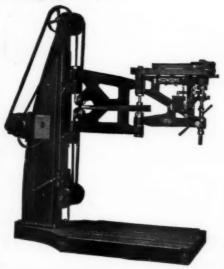
## Collet Specialists

Collets for Lathes, Hand Screw Machines, Automatic Screw Machines and Milling Machines carried in stock. Prompt delivery made on specials.

Send for Complete Price List

Hardinge Brothers Inc. 4149 Rayenswood Ave.

THE HAMMOND AUTOMATIC Tapping Machines are designed to rapidly and efficiently perform drilling, tapping, stud, nut and screw driving operations.



Drilling radius 4' 0" Capacity ¾" drills, ¾" taps, ½" studs

Write for full information

The Hammond Manufacturing Co.
7808 Kinsman Road, Cleveland, Ohio

A Sensitive Drill For High Production

Avey

No. 2 High Duty Ball Bearing

### **Drilling Machine**

IN THIS sensitive, high speed drill you have simple, sturdy construction which assures accurate drilling on a production basis. Costs are naturally low due to rapid production and freedom from drill breakage,

This machine can be furnished in single spindle or multiples up to six spindles, floor or bench type.

What are your requirements?



### BERJO VISE GRIPS

View below (top plates removed) shows how the variable jaws conform to shape of work.



THIS unique device saves time on machine operations and eliminates costly holding fixtures where you have short runs.

No matter what shape the work is, the BERJO assumes the contour of the piece and grips it firmly.

Complete descriptive matter at your request

The Avey Drilling Machine Co.

### Here-take one



### Free Trial

Only \$25.00 after it shows what it saves

Madison-Kipp Air Tools-Filer

—Chipper—and AG Grinder—
cost only \$25.00 each, and frequently save that much in a week.

They relieve high-priced toolroom workers of the arduous,
costly jobs of finishing by hand
to close tolerances in inaccessible
places.

One or all of these Kipp Air Tools sent on free trial for ten days to any firm having a satisfactory credit rating. You are under absolutely no expense until you have tried them and seen what they can do.

In the drive on costs, that faces every plant today — you need these tools . . . Mark your selection in the order blank below . . . send no money.

#### CHECK MODEL DESIRED ORDER BLANK Alle Priced MADISON - KIPP CORP'R Pressures in U.S.A. 217 Wanhesa Street. ☐ Filer 40-120 lbs. \$25,00 Madison, Wis. 40-120 lbs. 25.00 Send Kipp Air .., net 30 days, 30-50 lbs. AGL postpaid. If it is not satinfactory, we will return invoice and tool on or before the 10th day after date of invoice. (Note: if you prefer to use your regular order form, please attach this coupon to it, and copy the above return arrangement on your order for a complete record.) Address

## Norgren Regulating and Reducing Valve

For Air, Steam, Oil, Water and Non-Corrosive Gases



### A Revelation! in Greater Volume

Closer Regulation

Simply designed; precision machined; exclusive features; all essential parts accessible without removal from line.

Styles and sizes for various secondary pressures from 0 to 125 lbs., with inlet pressures up to 225 lbs.

Send for New Catalog

#### Norgren Sight Feed Automatic Air Line Lubricator



The NORGREN SIGHT FEED AUTO-MATIC AIR LINE LUBRICATOR not only provides a simple means of injecting lubricant into the air stream of pneumatically operated tools, but of even greater importance, the operator can SEE what amount of lubricant is entering the line.

It is adjustable to any demand by means of a needle valve and is entirely automatic in that it operates only when the air is in motion. There are no working parts.

You cannot forget to shut off the NORGREN Labricator. You cannot forget to turn it on. It is easily filled and positive in action.

Manufactured by

CARL A. NORGREN CO., - Denver, Colorado MANUFACTURERS OF Strainers, Blow-Valves, Blow-Guns, Air Chucks, Engine Cleaners, and Patented Couplings for Industrial, Acytelene, Service, Hi-Pressure Gresse and Metal Lined Paint Hose.

Eastern Distributor-J. N. Fauver Co., 31 Brady St., Detroit, Mich.

#### Taylor & Fenn Belt Driven

### No. 12 Spring Press



## UNIFORM BLOW SPRING PRESSES

Are made in three sizes, with either single or double action

Our No. 12 Belt Driven Spring Press, illustrated above, has a stroke of 3½ inches. The foot treadle operates a safety clutch attached to the flywheel, which automatically stops the machnie after each stroke regardless of whether the treadle is released or held down by the operator. The clutch can be adjusted for a continuous stroke if desired.

Descriptive circular gladly sent upon request

The Taylor & Fenn Co. Hartford, Conn., U.S.A.

#### No Clumsy Parallels if You Use a



#### Bay State Handy Vise

Here is a light but sturdy vise which grips and handles easily either fair sized or small work—a vise with step jaws that holds the work parallel without the bother of using parallels, clamps or other bothersome, clumsy tools. The Bay State Handy Vise is a real combination tool—vise, angle-iron, parallel V-block, clamps—all in one. Write for folder describing this handy tool which is ready to make life a little smoother for anyone handling miscellaneous tapping, drilling and grinding jobs.



#### VISE PRICES:

Capacity & opening \$30.

Capacity 4' opening \$25.

### **Bay State Hand Tapper**



#### Requires No Setting-Up!

This new device makes the old tap wrench obsolete! Your men will find this true whether they tap two holes a day—or two hundred.

Its operation is the essence of simplicity. You don't even have to change taps—the rack holds spindles enough, all set to operate, with various size taps for every job. You place the work on table against stop pin and select the size tap wanted, insert spindle into bracket sleeve—and turn the crank.

Simple, isn't it? Takes all the "trickiness" out of hand tapping. Eliminates spoilage of work and tap breakage, cuts labor costs and turns out uniform, accurate work easily and quickly.

Write for Complete Information

Bay State Tool & Machine Company 414 Albany St., Springfield, Ohio

### The New Type CC Power Screw Press

#### Perfected Die Processing

Malformed dies. waste of material and time, and excess operating expense are obviated by the use of this one-man press. The precision with which it aligns punch and die, its great power-100 tons pressure-and the mechanical perfection of its design are guarantees of more accurate work at the lowest possible cost.

Write for Catalog



Also Hand Screw Presses 25 and 80 Ton Pressures

### A Surface Grinder.

that is a revelation in quiet, efficient work. Powerful, rigid and sensitive in action. Equipped with all modern attachments.

Details and Price on Request

#### JARECKI MACHINE AND TOOL CO.

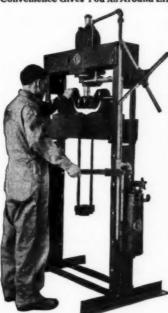
Department A

GRAND RAPIDS,

MICHIGAN

# KRW ARBOR PRESS NEW 1931 MODEL

Many New Improvements for Perfection of Operation and Convenience Gives You All Around Efficiency at Low Cost



A new double acting piston fills cylinder with oil as the ram is brought down by means of the hand wheel of unique design—sliding handles which pull out to the ends greatly increase the leverage.

Side members slotted to permit long bars to pass thru.

35 tons Capacity

Direct to You \$125.00

F. O. B. Factory

Complete with all attachments as shown

### K. R. WILSON

10-14 Lock St.,

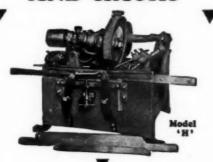
BUFFALO, N. Y., U.S. A.

K. R. Wilson Shop Equipment Sales Co., Los Angeles, California Export Department: 126 Liberty St., New York City

### WARDWELL

Combination Grinder

CIRCULAR BANDS AND HACKS



One years saw purchases can be made to last from six to eight years.

Write for catalog.



The Wardwell Manufacturing Co.

Manufacturers of the largest line of Saw Filers made in U. S. A.
3165 Fulton Road, Cleveland, Ohio



No. 20

For duplicating work by the use of Horse Shoe Gauges, Templet Sheets can be made to punch sheets with accuracy and speed not obtainable with any other method of punching. Capacity 1/4 hole in 1/4 iron.

No. 19

Ball Bearing, accurately designed square slide built like a Punch Press for irregular shape dies. Easily operated balanced lever can be moved to the job with ease, saves time, one man machine, capacity 1/4 \* in 1/4 \* iron.



Excelsior Tool & Machine Co.
East St. Louis, Illinois

#### Analysis of Circulation of HITCHCOCK'S MACHINE TOOL BLUE BOOK

#### By Dun and Bradstreet Ratings

(Corrected to September 1st, 1930)

To domestic concerns, and superintendents, works managers, production engineers, etc., in such concerns rated at—

Exceeding \$1,000,000	1,937
\$500,000 to \$1,000,000	1,486
\$300,000 to \$ 500,000	1,402
\$200,000 to \$ 300,000	1,306
\$125,000 to \$ 200,000	1,892
\$ 75,000 to \$ 125,000	1,827
\$ 50,000 to \$ 75,000	1,558
\$ 20,000 to \$ 50,000	3,190
\$ 10,000 to \$ 20,000	2,132
\$ 5,000 to \$ 10,000	
TOTAL . D C / ACCOO	
TOTAL to Private Concerns of over \$5,000 Steam and Street Railway Mechanical and Purchasing Officials. Government and Mu-	
Steam and Street Railway Mechanical and Purchasing Officials, Government and Mu- nicipal Plants, Technical Schools, Selected	2,990
Steam and Street Railway Mechanical and Purchasing Officials, Government and Municipal Plants, Technical Schools, Selected Foreign Importers and Users, Etc	2,990 21,324 2,232
Steam and Street Railway Mechanical and Purchasing Officials, Government and Municipal Plants, Technical Schools, Selected Foreign Importers and Users, Etc.,	2,990 21,324 2,232
Steam and Street Railway Mechanical and Purchasing Officials, Government and Municipal Plants, Technical Schools, Selected Foreign Importers and Users, Etc.,	2,990 21,324 2,232 1,424
Steam and Street Railway Mechanical and Purchasing Officials, Government and Municipal Plants, Technical Schools, Selected Foreign Importers and Users, Etc.,	2,990 21,324 2,232 1,424

<sup>\*</sup>This group includes a considerable number of large concerns, and some small ones of high credit, whose capital rating is not given by either of the commercial agencies.



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Can be used in various ways in any plant with a saving of time, as well as space.

For instance, on the assembly bench, these Bins make it possible to place more parts within convenient reach of the assembler, enabling him to do more work with less effort. Ideal for stockroom or toolcrib.

Made in four standard sizes, but can be furnished in sizes to meet your particular needs.

Bin No.	Width	Height	Length
1	5½ in. 7½ in.	4 in.	12 in.
2	71/2 in.	51/4 in.	15 in.
3	9 in.	61/2 in.	181/4 in.
4	12 in.	9½ in.	20 in.

#### STACKBIN CORPORATION

Pearl & Rice Streets,

Providence, R. I.

Stackbin Corporation
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Title

Firm ....

Address



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GOOD Products BETTER



#### Specializing in Serving the Manufacturing Consumer

And we have learned HOW to REALLY Serve.

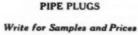
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MACHINE SCREW NUTS
WOOD SCREWS
LAG SCREWS
CAP SCREWS







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Reynolds
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MAGAZINE
FEED
Screw Driving
Machine

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Ask your Jobber about the other RIDID Pipe Tools, also. There are
RIBGID
Pipe Wrenches
Cutters Vises
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offers an effective, instantaneous way of overcoming this loss. Its steel fingers inserted in the broken tap remove it intact. An apprentice can operate it!

#### Made in three and four-flute styles

Often pays for itself in the 60 day trial allowed

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THEY are usually known among mechanics as lathe mandrels, but they work equally as well on millers or grinders. They also will take a job with a square hole as well as a round one.

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#### **Threading Tool**

The Most Practical and Compact Tool Made for Cutting New Threads or Re-Cutting Damaged Threads

Tested and Approved by Bureau of Standards and accepted for Shop and Field Use in the United States Army

#### Always Ready for Use

The Zoerman is assembled at all times, ready for use instantly. No dies to misplace or lose—any size is there to use when you want it.

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It is not necessary to back off after the thread is cut with the Zoerman—this means longer life to your dies. Just unlatch it—and off it comes. No danger of stripping threads.

#### **Cuts Tight or Loose Threads**

This is easily done with the Zoerman because it has positive adjustments in 64ths, 32nds and 16ths of an inch.

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Cuts down to shoulder without exertion. No guides necessary for re-cutting damaged threads—simply clamp tool on where thread is perfect and run off.

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ZOERMAN - CLARK MFG. CO.

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In other words, the velvet lies in volume, which usually is worth all that it costs. There are always some orders being placed, and it pays to spend and spend to keep in constant contact with those who are placing them.

This can be accomplished only by reaching all of those who might buy, so that none who do buy may be overlooked.

"Hitchcock's Blue Book" is published for that very purpose. By means of its carefully selected circulation of over 25,000 copies, it covers the metal-working industrial plants of the country, in all their hundreds of lines of manufacture, the important railway purchasing and mechanical officials, etc., etc., as well as the leading importers of machine tools in 28 foreign countries, more thoroughly and economically than is possible by any other method.

The only way to fool old "overhead" is to sell more machines, and a strong appeal for business through the pages of the "Blue Book" should be a real asset under any conditions. Its circulation is unusually broad and complete, its advertising is effective, and its rates are reasonable—an unusual combination for just such times as these.

### Extracts from a few of the many letters received from foreign importers of American machine tools, expressing their appreciation of the "Blue Book".

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We find your "Blue Book" of splendid value. Each month we pass it around to our various salesmen.

#### From Japan

This is indeed a very interesting and complete book, and undoubtedly it will be of assistance to us in our work and promotion of machines and machine tools in the Japanese market.

#### From Venezuela

This little manual will surely be useful to us and we would certainly appreciate your sending us a copy of each month's issue.

#### From England

Your publications have been much appreciated by us. They have been of material assistance.

#### From Germany

We have found this book very interesting and have used it frequently for information regarding American machine tools.

#### From France

We appreciate very much this magazine and never fail to look it through promptly upon its arrival.

#### From Belgium

We shall indeed be glad to receive your publication regularly, which will be of great interest to us, as we are importers of American machine tools.

#### From Denmark

We thank you very much for the "Blue Book". We find it of great value and ask you to send it to us regularly.

#### From Spain

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#### From Italy

If you will send this book regularly I would be very pleased, as it is certainly useful.

#### From Holland

We very much appreciate the "Blue Book" and hope to make good use of it.

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#### From Philippine Islands

We are very much obliged for your "Blue Book". We shall find these books most useful.

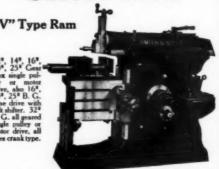
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We find it a very interesting book and will be glad to continue getting same.

#### SHAPERS

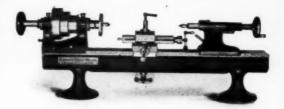
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"V" Belt Drive-3 speeds, 1/2 inch capacity-Jacobs Chuck -Ball Bearings "repulsion induction" type of motor - 31/2 inch travel of spindle-snap switch built into motor-quick return spindle-cord and plug furnished.

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It Repeats Its Readings! Send for Special Bulletin.



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U. S. MULTIPLE SPINDLE Drill Heads

Made regularly with 2 to 6 adjustable spindles, to drill in any pattern. Special heads to order.

Also made with fixed spindles to fit your work.

Drills two or more holes with the same speeds and feeds that are used for drilling one.

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#### NEW!

For the first time in the history of the machine tool industry, radial adjustment of a tool-carrying cross slide in a rotating tool head is brought under absolute micrometric control of the operator, either in or out, while the tool head and machine spindle are rotating and the tool is cutting.

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#### The Eincinnati

Ball Bearing Electric Drills, Screw Drivers, Nut Setters, Tappers, Valve Grinders, Aerial Grinders, Tool Post Grinders, Floor Buffers, Bench and Floor Grinders.

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### High Spe

"A Second or

THE CINCINNATI Hi the speedy cutting of a copper, aluminum, as sizes, angles and shape

Makes cuts, straight or the various cuts. This machine, the graduatic and fast. Work canno breakage. No water of

THE CINCINNATI us operating at periphera wheel is completely gubackward from the position of t

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The Cincinna

66

# afe, Speedy Cutting Use RE Gincinnati

### Speed Cut-off Machine

and or Two-and the Cut is Through!"

NATI High Speed Cutting-off Machine is unexcelled for ting of steel alloys, non-ferrous materials such as brass, num, as well as fibrous materials of all kinds, in various and shapes up to 21/4" inclusive.

raight or angle, up to 45°, the same vise being used for is. This vise is mounted and clamped to the base of the graduations on the table making angle cutting accurate rk cannot be cramped against side of wheel—avoiding water or other coolant is required.

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ON ON THE R. K. LeBLOND MACHINE TOOL CO. Cincinnati, Ohio, U. S. A.

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# Noc-out

#### **AUTOMATIC ROLL FEEDS**

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#### Easily Mounted On Any Punch Press

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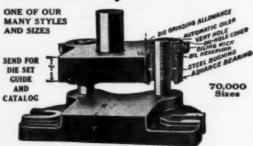


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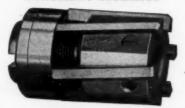
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Reliance Machinery Sales Company N. S. Pittsburgh, Pa. 1405 Brighton Road,

Automatics, No. 53 National-Acme. Automatics, No. 38 National-Acme, Bolt cutters, #, #, I-4 single head. Boring mill, 38" Gisholt, 2 heads. Boring mill, 36" Mies 2 heads. Boring mill, 36" Mies 2 heads. Boring mill, 36" Mies 2 heads. Boring mill, hor., 22" bar Cleveland Car wheel borer, 42" Ridgeway. Centering moche., Cadillac dbl. end. Drill, Mode! "P" Turner turret. Drill, No. 25 Foote-Bart hvy. duty. Drill, No. 4 Colburn mig. 4-apile. Drill, No. 28 Foote-Bart hvy. duty. Drill, No. 4 Colburn mag., 4-apdis. Drill, D-8 Colburn heavy duty. Grinder, 12°24° Modern plain. Grinder, No. 14 Gardner disc. Hammers, No. 2-A, h. d. Hi-Speed, Hoists, electric, 1 & 2 ton, d.c. mtrs. Lathe, 16°x6° Springfield brass. Lathe, 18°x6° Springfield brass. Lathe, 17°37'x6° Fay & Scott gap. Lathe, 48°x19° Metta-Bridgeford. Lathe, 8°x18° I. & S. q. c. g. Lathe, 3°x18° I. & L. Sat turret. Lathe, 18° Libby turret, s. p. d. Lathe, 18° Libby turret, s. p. d. Lathe, 21° Gisholt turret. (2). Lathe, No. 5-Fontet turret, grd.fr.hd. Lathe, No. 5 Foster turret. grd. fr.hd. Lathes, No. 4 W. & S tur., g. f. h. Miller, No. 2A Milwaukee plain. Miller, No. 1 Kempsmith plain, universal equipment.

Planer, 36"x12" Cluti, 2 heads. Presses, 36" Ferracute (2)e. Press, No. 34-A Toledo Stlles, Press, No. 39 Bliss horning. Press, No. 3 Federal, o. b. i. Press, No. 21 Bliss, o. b. i. Punch, No.2 H. & J. horizontalm.d. Punch, Wickes, 48" thrt., 2"ap. 1"x1". Punch, Cleveland, 60" thrt., 2"x1". Radial drill, 2" American, 1"x1". Badial drill, 2" American, g. b. Radial drill, 2" American, g. b. Radial drill, 2" American, g. b. Radial drill, 2" American, g. b. g. d., g. b. Radial, 6' Prentice plain. Seamers, Bliss, Leffler & Max Ams. Seamers, Bliss, Leffer & Max Ams. Shaper, 20° Stockbridge b, g. crank. Shapers, 24° & 22° G. & E., m.d., b.g. Shear, Model 0-15 Unishear, m. d., Shear, bar, No. 14 W. & W. cap. 2° rd. Shear, bar, No. 18 W. & W. cap. 2° rd. Shear, No. 09 Bliss circle. Tapper, nut. 4° Acme semi-auto. Turret lathe, 30° Gisholt, belt drive.

Our warehouse is full of bargains. What have you for sale?

#### FOR SALE BY

#### West Penn Machinery Company

1208 House Building. Automatics, 14" Fay. Automatic, No. 0 Brown & S. b. d. Automatic, No. 55 National Acme. Automatic, No. 58 National Active Air compressors, 30 to 1500 cu. ft. Bender, No. 6-C Wallace, m. d. Bolt cutter, 14" Landis, 4bl. bead. Bolt cutter, 14" Landis, 3 bds., m. d. Boring mill, 10'-16' Betts, 2 hds. m. d. Bor. mill, hor., No. 1 Cleve. 24"bar. Boring mill, floor type, 5‡" D. & H. Brake, 5' press type, 10 gauge. Brake, 6' and, 16 gauge. Brake, 6' and, 16 gauge. Brake, 5' D. & K. 10 ga. box & pan. Brake, 10' Dreis & K. 3/18", m. d. Bulldozers, Nos. 2, 4, 6, 28, 29 & 30. Dieing mches, 38 & 50 ton H. & W. Drill, 21" Rockford, tap. att. s. h. Drills, radial, 3†, 3', 5' and 10' Drill, radial, 6' Dreses, s. p. d. Grill, radial, 6' Dreses, s. p. d. Drill, radial, 6' Dreses, s. p. d. Grills, radial, 6' Dreses, s. p. d. Drill, radial, 6' Dreses, p. d. Grills, radial, 6' Dreses, p. d. Grills, radial, 6' Dreses, s. p. d. Drill, radial, 6' Dreses, p. d. Grills, radial, f. Grill Boring mill, floor type, 5#" D. & H.

Gear hobber, 18" Gould & E. m. d. Grinders, disc, Nos. 17 & 18 Beajs, Grinders, disc, Nos. 17 & 18 Beajs, Grinder, rad., 14", 220 v. 3, ph. 60 cy. Grinder, internal, No. 70 Heald. Grinder, surface, th' Arter. Grinder, tool & cut., No. 2 Walker. Hammer, Blacker, power, 35-lbs, Hammer, 80-lb. Bradley, cusp. helve. Hammer, 80-lb. Bradley, cusp. the Lammers, Nos. 3-B, 4-B, 4-M Nazel, Hammers, Ros. 3-B, 4-B, 4-M Nazel, Hammers, ateams, 600 lb. to 6900 lbs. Hammers, steams, 600 lb., to 6000 lbs, Jacks, 35-ton Barrett, ball bearing, Lathe, 10°×49′ So. Bend, chk., b. d. Lathe, 16°×59′ Hendey q. c. g. Lathe, 20°×78′ Hendey q. t. g. Lathe, 20°×78′ Hendey q. t. grd. hd. 20°×78′ Hendey hendey

Lathe, 48"x26' Bridgeford, g.hd.m.d. Lathe, tark, No. 8 Warner & S. Lathe, turet, No. 8 Warner & S. Lathe, turret, No. 8 Warner & S. Lathe, turret, 24" Steinle, 64" hole, Lathe, turret, 24" Steinle, 64" hole, Lathe, turret, 24" Libby, 74" hole, Lynholm tables, 27" a69".
Miller, dupler, 34" Cincinnati auto, Miller, dupler, 34" Cincinnati auto, Miller, plain, No. 2-A Milwaukee. Miller, plain, No. 2-A Milwaukee. Miller, plain, No. 2-B Rock'd, b. d. Miller, univ. No. 5 Brown & Sharpe. Pipe mechs., 8" Oster, 8" Williams. Pipe machine. 2" Landis.
Planer, 30" x30" x10" Woodward & P. Planer, 48" x48" X12" D. & H. m. d. Planer, 48" x48" X12" D. & H. m. d. Planer, 6. x, 36" x36" x16" D. & H.

Pittsburgh, Pa.
Planer, rotary, 48" Niles, m. d.
Presses, arbor, Nos. 7, 17 Greenerd.
Press, o.b., Ferracute Cl. 3" stroke.
Press, horning, No. 14 Toledo.
Press, hydraulic, 1,000 ton United.
Press, hydraulic, 1,000 ton United.
Press, No. 13" vally 2" stroke.
Press, No. 15" Toledo, 14" stroke.
Press, No. 98 Toledo, 14, 10" str.
Press, No. 98 Toledo, dc. 24" atr.
Press, No. 98 + Toledo, 42" x196".
Press, No. 50 Niagara, screw.
Press, No. 159 Toledo, screw.

Pittsburgh, Pa.

Fress, No. 87 Niagara, screw. Press, No. 159 Toledo, screw. Press, wheel, 200-ton Caldwell. Press, wheel, 400-ton Niles. Punch, hor., Cleveland, 1" thru 1". Punch, hand, Shatt, bar and angle. Punch & sh. No. 6 L. & A. 4" thru 1". Punch & sh. No. 6 L. & A. 4" thru 1". Punch & sh. No. 5 H. & J. 10".

Funch, munipie, No. 5 ft. c. J. ev. Riveters, air, hammer, spinning. Rolls, angle, 4°x4°x½° W. & W. Rolls, bending, 6°x14 ga, hand. Rolls, bending, 12°x4° H. & J. d. e. Sand blast, Pangborn, 90°. ER-1. Saw, band, metal No. 2 Klem, m.d. Saw, ciol. 48° Newton, m. d. Saw, frict. Model 1-A Hunter, 24°. Saw, frict. Model 1-A Hunter, 24°.

Saw, cold, 48" Newton, m. d.
Saw, frict, Model I-A Hunter, 24",
Saw, frict, Model I-A Hunter, 24",
Saw, frict, Model I-A Hunter, 24",
Saw, hack, No. 5 Marvel, b. d.
Shapers, 16", 29", 24" & 34" G. & E.
Shaper, 29" O'hio crank, vise, b. d.
Shaper, 44" Potter & Johnston, b. d.
Shaper, 44" Potter & Johnston, b. d.
Shaper, 48" Morton, draw cut.
Shear, angle, 6"%6", 4" Cleveland.
Shear, alligator, 14", 2", 3" & 4"
Shear, angle, 6"%6", 4" Cleveland.
Shear, alligator, 14", 2", 3" & 4"
Shear, angle, 6"%6", 4" Cleveland.
Shear, alligator, 14", 2", 3" & 4"
Shear, squil, No. 3 H. & J. 24" ag,
Shear, guil, No. 3 H. & J. 24" ag,
Shear, guil, No. 3 H. & J. 24" ag,
Shear, squil, No. 3 H. & J. 3" ag,
Shear, squil, No. 3 H. & J. 3" ag,
Shear, sq. 30" x18 ga. Bliss power.
Shear, sq. 3" x18 ga. Bliss power.
Shear, sq. 3" x18 ga. Rexto.
Shear, 12" x1" Wheeling, 31" gap, m.d.
Straightener, 6" united, 15 ga. 18 rolls.
Straightener, 6" United, 15 ga. 18 rolls.
Straightener, 14" round Abramson.
Straightener, No. 4 H. & J. 15" beams.
Swaging mche., No. 5- A Standard.
Testing machines, 4000 & 100,000-lb.
Tumbling barrel, 18" x38", b. d.
Unsetters, 1" to 6"
Welders, spot and butt.

Welders, spot and butt.

#### FOR SALE BY

#### Box 92, c/o Hitchcock Publishing Co., 508 S. Dearborn St., Chicago NAILING MACHINES

Two nailing machines, one Morgan and one Doig. Both in very good condition. Will sell at a low price to move them quickly.

Band saw, 36" Indiana; iron tilting table. Box-board matcher, one each, Morgan and Mereen-Johnson. Box-board squeezer, 36"x48" Mereen-Johnson No. 36. Corrugated fastener driving machines, both 1-head and 2-head Corrugated fastener driving machines, both 1-head and 2-head. Hand-hole cutting machine, automatic, Chase Turbine No. 292, Jointer, bench type, motor driven, 4" Wallace. Jointer, floor type, belt driven, 24" Fay & Egan No. 61. Lathe, hand wood turning, 18" swing.
Lock corner box cutters, setting-up machines and trimmers, Morgan. Mortiser, vertical hollow chisel, Crescent.
Flaner, pony, roller feed, 20" 28" Williamport Machine Co. Flaner, setting-up the copies and C. & D. Sander, horizontal surface belt, 14" Peerless No. 2.
Seree driving machine. Rewnolds No. 2. Screw driving machine, Reynolds No. 3.

Variety saw tables, tilting tables; Fay & Egan; also Berlin. Wire tying machine, Standard No. 4.

FOR SALE BY

The O'Brien Machinery Co.,

Automatic No. 00G B. & S., serial No. 9478. Automatic, 11" Cone 4-spindle (new

1929).

1823. Automatic, 24"-F Gridley, 4-spindle. Automatic, 9/16" Gridley, 4-spindle. Automatic, No. 52 Nat'l Acme, 4-sp. Bending roll, 25' H. & J. † cap. Drill, 28-spindle Natco, No. 2 taper. Drill, 34' American triple purpose radial. Drill, 4' Cincinnati Bickford radial,

Drill, 4 Chriman Dright, sliding motor drive.
Drill, 34" Aurora upright, sliding head, motor drive.
Grinder, No. 11 B. & S. cyl. 6"x30".
Hammer, No. 1 Nasel belt drive, capacity 2"x2".
Lammer, 3068 lbs. Chambersburg,

Hammer, 2000 lbs. Chambersburg, double frame, steam forging. Hammer, 1100 lb. N. B. P., sgl. fr. Lathe, 14"x6' Monarch, belt, collets

and taper. Lathe, 16"x8' Lodge & Shipley, grd. head with a. c. motor and collets. Lathe, 36"-60"x32' McCabe, belt

drive. 20"x20' Lodge & Shipley Lathe, belt drive quick change gear. Lathe, 48"x16' Lodge & Shipley, all geared head.

Lathe, 80"x30' Harrington. Miller, No. 1M Cincinnati universal Miller, No. 3 Becker universal, table 12"x40"

Miller, No. 3B Brown & Sharpe pl. Miller, No. 4 Brown & Sharpe plain.

113 N. Third St., Philadelphia, Pa.

Milling mche., No. 3 Garvin duplex. Pipe machines, 2", 4", 6", 8" & 12" Oster, Cox, Williams, Eaton-Cole & Burnham and Jarecki makes, belt or motor driven, comp. stock.

Pipe machines, Oster portable, gas. drive, all sizes. Planer, 30"x30"x6' Detrick & Harvey

openside, belt drive.
Planer, 24"x24"x8' Cincinnati belt

Planer, 38" X3" X8" Clacumati bett driven, one head. Planer, 38" X36" X12" Cincinnati, 2 hds. Press, No. 72 Blisstrimming press. Press, No. 37 Niagara, 1100 lb. fly-wheel, solid back. Press, No. 123 Ferracute, gened double acting, flywheel 475 lb.

Press, DD3 Ferracute, dbl. acting. Punch, No. 52 Beloit, belt, capacity

4"x".

Punch, No. 14 H. & J. 20" thrt., \$14

Punch and shear, 38" Hilles &
Jones, cap. 14"x1", belt drive.

Punch and shear, 24" Southwark

arch jaw, cap. 4"x1", motor drive.

Saw, 30" Espen-Lucas, cap. 8".

Shaper, 34 Gould & Eberhardt,

belt drive.

Shear, angle, Type C Long & A. double, capacity \$x8x1 angles.
Shear, Niles, plate splitting, 1" cap-

acity, motor driven. Shear, 8' Covington, squaring. gap pattern, 8" capacity. Slotter, 10"-12" Dill, belt drive.

Turretlathe, No. 6Warner & Swasey wire feed.

#### FOR SALE BY

#### Marr-Galbroath Machinery Co.,

Air comp., 4‡"x4‡" & 6"x6" Curtis. Air comp., 12x16" Ing-Rand ER1, 355 cu. ft. motor drive.

Bender & straight'r, cap. 12" beams, Blower, No. 7 Sturt. 12" outlet. Blower, No. 40 Connersville. Blowers, Root No. 4, 500 c. p. m. Blowers, Root No. 4, 500 c. p. m. Blowers & exh., 6, 8, 9 & 16" opening. Bolt catter, 1" Wells Bros, m. d. Boit cutter, 14" Landis, dbl. hd. (l. s.) Bolt cutter, 2" Acme, single head. Boring mill, 54" Maxi type, 2-hds.,

a. c. motor drive.

a. c. motor drive.

Boring mill, 30" King; and Bullard.

Roring mill, 22" bar W. & S. horis.

Brake or press, 10' Keene toggle

capacity 16 gauge. Brake, 6' No. 161 Chicago for 16 ga. Brake, 6' No. 181 Chicago for 18 ga. Trake, 6' 12 ga, power, Chicago. Brakes, hand, 6' 16' 16 r 18 ga. Broaching mch. No. 3 LaP. Hudson. Bullouer, No. 2 W.-W., fric. clutch. Chuck, Heald magnetic 184x60''. Chuck, Walker magnetic, 6' diam. Cold beader, 4' W.-F., solid die. Cold bader, 4' W.-F., solid die. Cold pader, 4' W.-F., solid die. Cold pader, 4' W.-F., solid die. Cold pader, 5' W.-F., solid die. Cold pa

Driller, Detroit 5-spindle semi-auto., Folders, bench 30" hand (4). Forging mach., 14" Ajax, steel bed. Forging mche., 3" Ajax, steel bed. Forging mche., 3" Acme steel bed. Furnace, rotary annealing, 12"x8'. Furnaces, oil tempering, 10"x10"x10" Gear and pinion cutter, No. 3 Sloan, Grinder, No. 12 Landis universal. Grinder, No. 1 LaSalle surface.

Grinder, No. 1 LaSalle auriace. b. Grinder, B.-D. Kowbottom, ochical, Grinder, B.-D. Kowbottom, ochical, Grinder, B.-D. Kowbottom, ochical, Grinder, No. 17 Beily 30" ochibe. H. Charles, M. C. 18 Beily 30" ochibe. H. Charles, S. W. 18" 12" Racine. Hack saw, 8x6" 12" 12" Racine. Hack saw, Peerless, 6" univ. shaping Hammer, 280 B. L. Giant belt pwr. new. Ham., 490 B. No. 10 Beaud, pwr. b.d. Hammer, 800 B. Erie stm. forg., s.f. Hammer, 1000 B. Chbg., steam drop. Hoists, chain, 1 to 8-tons capacity. Keyseaters, No. 90 & No. 2 Baker, Keysway cutter, 24" Morton, cap. 34" Lathe, 12" 28" Reed-Prentice geared head, belted m. d. Lathe, 14" 28" Hendey q. c. g., pan,

head, beited m, d.
Lathe, 14" & Hendey q. c. g., pan,
Lathe, 15" x6" South Bend, chuck.
Lathe, 15" x7" S. Bend, p.c.g.ck. c/s.
Lathe, 16" x9" S. Bend, 2 cks. & c/s.
Lathe, 16" x9" S. Bend, 2 cks. & c/s.
Lathe, 16" x9" L. & S.sel. hd. m.d.t.a.
Lathe, 21" x8" L. & Blond, q. c. g.,
d. b. g., 14" h. s., chuck.
Lathe, 29" x 10" Hendey, beited m. d.

#### 58 Water St., Pittsburgh, Pa.

Lathe, 16"x10' Prentice, g.h. q. c.g., la"h. s., t. a., chuck Lathe, 26"x12' 10" W Wickes, semi-

q. c. g.; h. s., chuck, c/s. Lathe, 38"x18', s. b. g., c Lathe, 38"x18", s. b. g., chuck, c/s Miller, vertical, No. 3 Becker, cone, Miller, No. 28 Ohio pl. auto. feeds. Miller, No. 12 Knight, il. r. t., vise; chk. Miller, No. 3 Le Blond, plain.

Motors, \$, 2, 5, 7\$ h. p. 3/66/220 v. Motor, 5 h. p. 500 v. d. c., 1500 rev. Motor, 10 h. p. a. c., 3/60/220/1740. Motor, 20 h. p. 220 v. d. c., 350/1050 rev.

Motor, 28 h.p. 229 v.a.c., 589 / 1000 rev. Motor, 28 h.p. slip g., 3/69/229/1160. Pipe mch., 6 Jarki pump, pip. dies. Planer, 24 x 24 x 6 Gray, 1-head. Planer, 30 x 10 W. & P., 2-heads. Press, No. 3A Biiss, adj. table, md. Press, No. 14 Toledo horn. Press, F-162 Ferracute, from

Presse, No. 3 Bliss, punch type.
Presses, No. 3 Bliss, punch type.
Presses, o.b.i., No. 1 Toledo.
Press, No. 19, 21, 22 Bliss o. b. i.
Pr., o.b.i. No. 1 VKV; No. 1 Sidney.
Press, o.b.i. No. 3 Niagara, 14"
Press, c.3 Ferracute, o. b. i., plain.
Desset Food No. 47 Bliss, possible.

Presses, foot, No. 87 Bliss, pendulum. Press, No. 6 Perkins, s. s., 4000 lbs. Presses, No. 87 Niagara, screw. Press, s. s. 66" bet. hgs, 7600 lbs;

roller feed motor drive.
Punch, s. e., Badger, 7" thrt., 4"x4".
Punch, s. e., Badger, 8" thrt., 4"x4".
Punch, s. e., Buffalo 30" thrt., 4x8" cap. Punch, No. 13 Niagara hand power, 10" tht; wt. 140 lbs.

Punch, Rapid, 20" tht., 1"x1", m. d. Punch & stake riveter, No. 123-C. Toledo boilermakers. Riveter, Grant No. 101, 5/16" cap.,

for motor drive.

Riveters, 1-AA, 3-A, 54-B, hi. speed.

Screw machine. No. 0G B. & S.

Screw machine. No. 0G B. & S. automatic, belted motor drive, Shaper, 7" Rhodes, vert. ram. m. d. Shaper, 15" Hendey friction, vice. c/s. Shaper, 30" & 16". Cin., b. g., crank. Shaper, 42" S. & M. b., g., crk., A.1. Shear, 42" x4" Niagara, 18" gap. Shears, 4" & T. Lenox. throatless. Shear, plate, 60" x4" L. & A. 7"

gap, arr. for motor drive. gap, arr. for motor drive.
Shear, rotary, 12" thrt., cap. 10 ga.
Shear, rotary, 38" throat cap. 7,32".
Shear, rotary, 18 ga., Yoder, 28" thr.
Shear, squaring, 6" x16 ga. power.
Shear, squaring, 6" x16 ga. Canton.
Shear, 10" x16 ga. Ohl power.
Shear, squaring, 30" x18 ga., F. & P.
Slotter, 16" Dill, for motor drive.
Spin. 1ath., 6" Hiss., cr., tallintock.
Thread, mch., 1" Geometric, s.A.B.st.
Turret, No. 4" M. & S., g. f. h. w. l.

#### FOR SALE BY

#### General Machinery Corporation, Drill, Sibley 24" al. hd., b. g., p. f. Drill, Myers 14" rd. and sq. tables. Grinder, Landis &x18 plain. c. s. Lathe, Warner & Swasey 14" turret, Miller, Becker, No. 7H (Lincoln).

140 Federal St., Boston, Mass. Miller, Hendey No. 8 (Lincoln), Press, Niagara No. 2 flywheel, Shaper, Hendey 15" friction. Shaper, Potter & Johnston 15" univ. Shear, Bliss No. 185 rotary.

#### FOR SALE BY

Scott-Bansbach Machinery Co., 4607 West 20th St., Chicago	, m.
Automatic screw machines, No. 90 B. & S., ser. nos. 5155 & 5167, ea \$	450.
Auto, screw mch., No. 9G Brown & S., serial no. 4290 with a. c. motor	800.
Automatic screw machine, No. 0 B. & S., serial no. 3830	325.
Auto. screw mchs. No. 0 B. & S. nos., 3340, 3495, 3831, slotting att. each	450.
Automatic screw mche., No. 0 B. & S. turret former, serial no 3123	200.
Automatic screw machine, No. 2 Brown & Sharpe serial no 6379	750.
Automatic screw machine, It" Gridley 4 spindle model F	500.
Automatic screw machine, Il" Gridley 4-spindle model F	650.
Automatic screw machine, 2 -3" Cleveland model A, square pan	500.
Automatic screw machine, 21-34" Cleveland model A, square pan	500.
Bolt cutter, 2" D. & H., double head	200.
Drill, 4-spindle L. & G., h. s., b. b., tapping attachment on 1 spindle:	65.
Drill, 4-spindle L. & G., n. s., b. b., tapping attachment on I spindle;	
p. f. 2 spindles, I plain spindle	700.
Grinder, No. 190 Greenfield universal cutter and tool complete	300.
Grinder, No. 1 Norton universal cutter and tool, power feed	150.
Grinder, No. 2 Brown & Sharpe automatic surface, magnetic chucks	250.
Grinder, No. a brown & Sharpe automatic surface, magnetic chicks	450.
Grinder, Capitol internal, capacity 3/16" to 2"x2"  Grinder, No. 7 Gardner 30", b. b. with press, belted motor drive	150.
Lathe 16"vs' LeRland quick change	450.
Lathe, 16"x8' LeBlond quick change. Lathe, 18"x6' Hendey quick change, taper attachment serial no 1918.	800.
Lathe, 18"x7' South Bend, q. c., a. c., motor drive and chucks	600.
Lathe 18" of Chard semi-quick charge goar	425.
Lathe, 18"x9' Chard semi-quick change gear Lathe, 18"x8' Davis heavy duty, q. c. g., d. b. g., 14" 4-jaw chuck	880
Lathe, 30"x13" H. S. & G. heavy duty, q. c., d. b. g. 16,000 lbs	250
Miller, No. 3 Cincinnati, cone drive, old style	350.
Miller, No. 3 Kempsmith, cone drive, with c/s and vise	600.
	450.
Miller, Cleveland universal, No. 1 g. h., fully equipped	750.
Miller, No. 2 MU, Garvin universal, fully equipped	550.
	150.
Miller, No. 5 Becker vertical, no rotary	525.
Miller, No. 7 Becker, Lincoln type	125.
Miller, No. 21 Garvin power feed, oil pump	150.
Miller, Hendey, Lincoln type Miller, No. 12 Brown & Sharpe production type	100.
Miller, No. 12 Brown & Sharpe production type	150.
Miller, Ingersoll slab, 42"x36"x9'	800.
Miller, Ingersoll slab, 42"x36"x5"	200.
Planer, 36"x36"x12' Cincinnati with 2 heads	200.
Press, No. 4 Rockford o. b. i. punch, 21" stroke, 3500 lbs	375.
Press brake, 16' Ohi power, No. 16 gauge	500.
Screw machine, No. 1, B. & O. plain head, 13/16" capacity	225.
Screw machine, No. 0 Brown & Sharpe hand	150.
Separator, Curtis oil, 1 bushel	275.
	300.
Shaper, 20" Cincinnati, crank, back geared, vise and c/s	550.
Shaper, 20" Columbia back geared crank	750.
	790.
Shear, 42" Niagara foot power, No. 14 gauge capacity	100.
Turret lathe, 2 x10" Milholland, for chuck and bar work	850.
Turret lathe, 34"x26" Acme with chucking equipment	500.
	100.
Wire straightener and cutter. No. 3 Moeter, 9 to 16 ga. x2' to12'	200.

#### FOR SALE BY

#### M. A. Wertman Machinery Co., 427 Penton Bidg., Cleveland, Ohio

Boring mill, No. 32 Giddings & Lewis, very good condition. Boring mili, No. 32 Giodings & Lewis, very good condition. Brake, Robinson 8' 16 gauge, new condition. Gang slitter, 36' Yoder, lot of cutters and spacing collars. Grinder, No. 3 Brown & Sharpe universal, countershaft drive. Header, Manylle No. 3 a. d. d. s., excellent condition, (3). Lathe, [12",3" Hendey tool room, serial above 1990. Lathe, [6",3" Hendey tool room, serial above 1990. Lathe, 16",3" Hendey tool room, serial above 1990. Cheap. Saw, Peerless 6",6" high speed.
Shaper, Smith & Mills 21", cone type, bargain price.
Tapper, 8" Rickert-Shafer horizontal column type. Turret lathe, No. 2 Bardons & Oliver, b. g. and power feed.

#### FOR SALE BY

#### Davis Machinery Exchange. 1-3-5 So. St. Clair St., Toledo, Ohio

Bolt threader, 2" Landis dbl. head. Bolt threaders, 12" and 2" National. Boring mill, 24" Bullard vertical,

Boring mili, 34" Bullard vertical, new era head. Drill, 20" Barnes, 4-spindle. Drill, No. 310 Baker hvy. duty, (2). Drill, 3' Carlton radial, g. b., s. p. d. Drill, 3' Bickford radial, g. b., s. p. d. Drill, 3' agn radial, tapping attach-ment, universal table.

ment, universal table.
Drill. Aspindle Allen, h. s. b. b.
Drill. Henry & Wright, h. s. b. b.
Drill. Sipp h. s. b. b. (2).
Drill. Sipp h. s. b. b. (2).
Drill. No. 3 Avey, h. s. b. b.
Drill. 2-spindle, L. & G. h. s. b.
Drill. 2-spindle, L. & G. h. s. b.
Drill. 14" Cincinnati s. h., b. g., p.f.
Drill. 16" Kern hi-speed.
Drill. 6-sp. Nat. Acme horizontal.
Grinder, No. 2 Gardner disc, comp.
Grinder, No. 4 Gardner disc, comp.
Grinder, No. 4 Gardner disc, comp.
Grinder, No. 4 Gardner disc, 15 h.
p. motor drive.

Grinder, No. 4 Gardner disc. 19 h. p. motor drive.
Grinder, No. 7 Gardner disc. comp.
Grinder, No. 4 Oliver drill pointer.
Grinder, No. 14 Brown & S., plain.
Grinder, 18"48" Landis pl. sell-con.
Grinder, No. 60 Heald cylinder.
Grinder, No. 2 Oakley univ., comp.
Groover, 42" Toledo power. Hack saws, 6x6 Racine & Peerless.

Hack aws, 5:8 Racine & Peerless. Hammer, \*\* Schuster riveting. Keyseater, No. 6 Mitts & Merrill. Keyseater, No. 6 Baker. Keyseater, No. 2 Davis, cap. \*\* Ceyseater, No. 3-M Mitts & Merrill. Lathe. 19"\*:10" Sidney q. c. g. Lathes, 14"\*, 16" Sidney q. c. g. t. att. Lathes, 14"\*, 16" Sidney q. c. g. t. att. Lathe, 16"\*, 6" Walcott q. c. g. t. att. Lathe, 16", 6" Walcott q. c. g. t. att. Lathe, 16", 6" Oliver q. c. g. engine. Lathe, engine, 18"; 27" Lehmann, q. c. g. g. engine. c. g , chuck.

Lathe, 18"x8' American q. c. g.

Lathe, 18"x10" American q. c. g., taper and relieving attachments. Mill, No. 1 Kempsmith universal. Mill, No. 2 LeBlond univ. index &

vertical head. complete.

Mill, No. 1 Becker-Brainard universal, complete.

veraal, complete, Mill, No. 3, LeBlond, univ., comp. Mills, No. 1‡, No. 2 and No. 2 Cincinnati plain, all geared feeds. Mill, No. 2 Kempamith plain. Mill, No. 2 Kempamith plain. Mill, No. 6 Steptoe, p. 6. Mill, No. 8 Steptoe, p. 6. Mill, No. 8 Steptoe, p. 6. Mill, No. 8 Mill, No. 3 B. & S. vertical, p. d. Mill, No. 12 B. & S. vertical, p. d. Mill, No. 12 B. & S. production, (2), Milling, No. 17 Toledo b. hand (2). Milling and drilling machine, No. 1‡ Knight.

Knight.

Milling and drilling machine, No. 18
Knight.
Nibbler, metal No. I Campbell,
Oil groover, Fisher No. 1.
Press, arbor, No. 3A Atlas,
Press, No. 4. Toledo, o.b., flywheel.
Press, No. 4 Toledo, o.b., flywheel.
Press, No. 6 Bilss, bench type fo.
Press, No. 8 Bilss, bench type fo.
Press, No. 8 I Consolidated, bench.
Press, No. 8 I Consolidated, bench.
Press, No. 8 Consolidated, bench.
Press, 40 ton Manbattan screw
Screw machine, No. 7 Foster,
Screw machine, No. 7 Foster,
Screw machine, No. 7 Foster,
Screw machine, No. 6 Foster,
Screw mache, 18 Cleveland Model A.
Shaper, 16" 2 20" Cin. crank b. g.
Shaper, 16" 2 20" Cin. crank b. g.
Shaper, 34" Smith & M. crank, b. g.
Tappers, No. 1 & No. 2 X Garvin
vertical 15 (Semental 15).

vertical (5).
Threader, \$" Geometric,
Welder, 50 k. w. Taylor spot, 440 v.



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#### FOR SALE BY

Geo. M. Bernstein & Co., - 221 No. Elizabeth St., Chicago, III. Bench lathe. Ames 1', 19 collets.

Bench miller, Ames precision univ., dividing head, vise, collets.

(The above is one unit on bench with countershafts).

Orill, \*\* L. & G. ball bearing, tapping attachment.

Drill, \*\* Avey ball bearing, (a).

Drill, \*\* Avey ball bearing, (b).

Drill, \*\* Avey ball bearing, (b).

Drill, \*\* Aspindle Allen ball bearing, (2).

Drill, \*\* (\*\* Spindle Allen ball bearing).

Drill, I", 4-spindle Allen ball bearing.
Drill, 28" Cincinnati single head, back geared, power feed,

Drill, 28", 4-spinute raises be treated.

Drill, 28" (Cincinnati single head, back geared Gear hobber, No. 3 Barber-Colman.

Miller, No. 14 Garvin plain.

Miller, No. 15 Rockford plain.

Miller, No. 15 Rockford plain.

Punch press, No. 3 Toledo o. b. i.

Punch press, No. 3 Toledo o. b. i.

Punch press, No. 3 Rockford.

Riveter, No. 4 A High Speed.

Shaper, 18" Smith & Mills.

Shaper, 16" Milwaukee, back geared.

Shaper, 16" Steptoe, back geared.

Shaper, 24" Rockford, back geared.

Shaper, 24" Rockford, back geared.

100 other tools in stock, send us your inquiries.

#### FOR SALE BY

#### Machine Tools Sales Company Philadelphia, Pa. S. E. Corner 5th St. and Washington Ave.,

Exceptional Values Boring machine, 16' Niles vertical, motor drive.

Boring machine, 10-16' Niles vertical, belt drive.
Boring mill, 10' Pond vertical, motor drive.
Drill, 78-spindle 26' Hill boiler shell, motor drive.
Drill, 28" Hoeffer upright, tapping attachment, motor drive.

Drill, No. 1. Baush multiple, rectangular head, belt drive.
Drill, No. 1. S Garvin dupler horizontal belt drive.
Gear cutter, No. 4. A Cincinnati 72".
Gear cutter, No. 6. Brown & Sharpe automatic, 72".
Gear hobber, 180" Schuchardt & Schutte, motor drive.

Gear hobber, 160" Schuchardt & Schutte, motor drive.
Grinders, No. 2 Brown & Sharpe, Diamond & Reid surface, belt drive.
Grinder, No. 18 Brown & Sharpe tool and cutter.
Lathe, \$2" x34" Pittsburgh tripie geared, motor drive.
Lathe, 24" x10" American geared head, motor drive.
Lathe, 18" x10" Reed-Prentice geared head, motor drive.
Lathe, 18" x10" American geared head, motor drive.
Lathe, 18" x20" American geared head, motor drive.
Lathe, 18" x20" American geared head, motor drive, motor drive.
Lathe, 18" x20" American geared head, motor drive, motor drive.
Lathe, 18" x20" American Geared head, motor drive, motor drive.
Lathe, 18" x20" American Geared head, motor drive, motor drive.
Lathe, 18" x20" Hendey cone tie-bar head, taper attachment, draw-in collets,
earlal numbers over \$2500, with countershaft.

Lathe, 14 '86' Hendey tie-bar head, cone drive, taper attachment, draw-in collets, serial approximately 12886, with countershaft.

Miller, No. 4 Kempsmith maxi-, motor drive.

Miller, No. 4 Cheinnatt universal, cone drive.

Miller, No. 4 Cheinnatt universal, cone drive.

Milling machine. No. 2-M Potter & Johnston, single pulley drive. Press, 1000 ton hydraulic die. Shear, 4264" Newbold, motor drive. Slotter, 15-18" Dill, motor drive.

Trucks, Antomatic Transportation Co.'s tl, 75" lift with new batteries, 1500' of gravity roll conveyor, 10" to 30" wide.

#### FOR SALE BY

#### Wachs-Gregg & Co.,

#### Telephone: Randolph 1822

Boring machine, Giddings & Lewis No. 32, with a. c. motor. Boring mitt, Dubasa R., Drill, Cincinnati Bicklord 3' radial, Drill, W. E., gang 6' radial, Drill, Foote-Burt 24' heavy duty, Drill, Harrington, 61 B, multiple, Drill, Woodward & Rogens 6-pdd. Drill, Pratt & Whitney No. 12 mult, Pratt & Whitney No. 12 mult, Fox lathe, Warmer & Swauey No. 3. Grinders, Nos. 5 and 6 Badger disc. Grinder, No. 5 Modern internal. Hammer, Mayer 109 [b. upright. Boring mill, Bullard 60" Lathe, Bradford 32"x18'.

#### 117 N. Jefferson St., Chicago

Lathes, Rockford 15"x6'. Lathe, Whitcomb-Blaisdell 18"x8' Milling machine, Cinu. No. 2 univ. Milling mche., Rockford No. 0 plain Milling mche., Garvin No. 2 duplex. Milling machine, Knight duplex.
Planer, Belmer, 46"x46"x12', 3 hds.
Press, Niagara No. 50 o. b i.
Press, new Swaine No. 73 dbl. crank Screw machine. Foster No. 4.

Shaper, Cincinnati 20". Turret lathe, Pratt & Whitney #"x4#" Turret lathe, Warner & Swasey No. 2 A, chucking machine.

#### FOR SALE BY

#### McDonald Machinery Co.,

Air compressors, Curtis 10x10 m. d., double cyl.; DeVilbliss 8x6. Bolt machines, Landis & Acme 1 hd.,

1\frac{1}{2}" capacity.

Boring mill, Lucas No. 21 horizontal, 2\frac{1}{2}": Woods 3". Boring mills, 4 Bullard 42" low price. Brake, D. & K. 6' 10 gauge, power. Cut-off mchs., 4 Davis 6" capacity. Drill, Moline 4-spindle and 32-spdle. Drill, Foote-Burt 4-sp. No. 2 gang. Drill presses, Allen and Sipp 4-spdl. 

generator.

generator. Grinders, modern internal; Blount 30°, wet (3), Heald 8° mag, ck.; Landis No. 18 int. Landis 16° x2°. Grinders, St. Louis No. 9; Modern 12° x80° safety, 10 h. p. d. c. Grinder, Pratt & Whitney vert, surf. Grinder, Walter 18° c.

q. c. g.; Lehmann 18"x7' q. c. g.; 49 assorted sizes, quick and loose change gear.

#### 1535 N. Broadway, St. Louis, Mo.

Lathes, Greaves-Klusman 24"x16' standard change with chuck.

standard change with chuck.
Milling machines, Ohio No.20 plain,
LeBlond No. 3-H; Brown & S.
No. 3; B, & S. No. 3 B pl., s.p.d.;
American No.12; Kempsmith No.1 American No. 17; Rempsmith No. 1 Cincinnati No. 3; Becker No. 25 all plain; Kemp No. 3; Cincinnati No. 14; Ohio No. 29 all universal; B. & S. No. 5 vertical; Cincinnati

18" mfg; Becker No. 2-H vertical. Milling and drilling mchs., Knight

No, 14 with power feed, vertical.

Pipe machine. Curtis 3", motor dr.;
Merrill 4"; Curtis 24" to 12" m. d.

Planers, Gray 28"x28"x6" 1 head;
Cincinnati 36"x36"x18' 2 heads; Pond, 36"x36"x12' table, 18' bed, 2 heads; Flather 24"x24"x6'; Gray 24"x24"x6', 1 head.

Punches, Reade 15" s. e., 4" in 4". Punch presses, 4 Consolidated No. 2; Federal Nos. 1, 2, 3 and 4; Bliss No. 19; 2 horn presses; Niagara No. 3; Sidney No. 2, o. b. i.

No. 3; Sidney No. 2, o. b. i. Screw machine, Cleveland 2½" auto.; P. & W. No. 2½ hand; Foster No. 3 hand; Woods No. 2 tited turret, Milholland No. 4 b.g. hand; Foster No. 7 hand b. g.; W. & S. No. 1. Shaper or alotter, yert., P. & W. 6". Shapers, S. M. 16"; 24"; Queen City 24" back geared; G. & E. 16", b.g.;

24" back geared; G. & E. 16", b.g.; Niles travelling head; Milwaukee 16" b.g.; Walcott 20" b.g.; S. & M. 24" and 26" b. g.; Ohio 16". Climcinnati 20" b.g.; Rhodes 7" Queen City 16" b.g.; Potres Ø. 1.6". Shears, 60" thrt. rotary slitting. (2). Square shears, Niagara 62" power. m. d. 18-ga.; Ohl6" power 16 gauge. Thread miller, Lees-Hardner No. 54. Turret lathes, Warner & S. No. 24.

#### FOR SALE BY

E. L. Klauber Machinery Co.,	320 South Third St., St. Louis, Mo.
	THES.
14"x 6' Davis tool room, q. c. g. 18"x 6' Rahn-Larmon	22"x12' Lodge & Shipley q. c. g. 24"x10' Lodge & Shipley q. c. g.
	30"x14' Bradford. AND TURRET LATHES.
No. 0 Brown & Sharpe automatic. No. 0 Brown & S. semi-automatic.	No. 4 Wood tilted turret g. f. h.
No. 24 Garvin p. f. t. MISCEL	
Drill presses, 50 from 10" to 34". Grinder, No. 3 B. & S. universal.	Shaper, 16" Smith & Mills light. Shaper, 16" Smith & Mills, heavy.
Miller, No. 2 Cincinnati universal. Planer, 20"x20"x4'. Presses, Nos. 2 & 3 Toledo o. b. i.	Spot welder, 25 k. w.

FOR	SALE BY
Wm, C. Johnson A	Sons Machinery Co.,
1211-1223 N. 12th St.,	St. Louis, Mo.
BOLT T	HREADERS
12" Landis.	2" Landis double head.
Landis double head.	2" Landis.
	RILLS.
3' arm American, motor-driven.	1-spindle Avey.
14" Mason high speed.	2-spindle Allen.
20" Champion.	2-spindle No. I Avey, ball bearing.
22" Barnes back geared.	3-spindle Avey.
25" Barnes back geared.	8-spindle Bausch.
Wells Bros, universal.	12"x60" Landis universal.
No. 2 Walker universal.	12 Xou Landis universal.
	THES.
16"x6' American geared head, t. a.	24"x14' Whitcomb-Blaisdell, motor
14"x10' Lodge & Shipley, q. c. g.	driven.
20"x10' Bradford.	26"-48"x16' McCabe 2-spindle, hvy.
24"x10' LeBlond.	30"x15' Lodge & Shipley, q. c. g.
24"x12' Lodge & Shipley.	36"x18' Prentice.
24"x12' Boye & Emmes, q. c. g.	
	LERS.
No. 1 U. S. hand.	No. 3 Brown & Sharpe universal.
No. 0 Burke bench.	No. 5-B Brown & Sharpe,
No. 2 Le Blond universal.	No. 14 Kempsmith, plain.
No. 3 Rockford hand.	INC MACHINES
	DING MACHINES.
14" Landis. 2" Landis.	6" Jarecki. 8" Williams.
2" Bignall & Keeler.	Williams.
a Diguest or Account.	POORO

		8" Williams.	
	PRE	SSES	
		No. 24 Toledo cam drawing. No. 723 Toledo cam drawing.	
)	TUR	RET MACHINES.	

No. 1½ Bliss toggle.
No. 3 Toledo.
Stiles & Parker drawing.
Stiles & Parker drawing.
No. 2 Warner & Swasey hollowhex.
No. 3-A Warner & Swasey.
3°238" Jones & Lamson, ADEDS A 2" Cleveland single spindle automatic screw machines.

SHAPERS AND PLANERS.

aper. | 22" Cincinnati shaper. | 36"x38"x12" Cincinnati planer. 16" Smith & Mills shaper. 24" Milwaukee. MISCELLANEOUS

Bar shear, 8"xi". Hammer, 60 lb. Bradley helve. Hammer, 250 lb. Little Giant. Hammer, 608-lb. steam. Punch, No. 14 W. W., 12" throat. Saw, No. 17 Higley cold. Tapper, auto., Rickert & Schafer.

#### FOR SALE BY

#### United Mchry, & Supply Co.,

Drill, Detroit 5-spindle. Grinder, tool and cutter. Hammers, 50 and 100 lb. Lathe, American 18"x12' q. c. Lathe, So. Bend 13"x8' gap, m. d. Miller, No. 2 plain, div. head.

#### 1241 Walton St., St. Louis, Mo.

Pipe threader, Oster I to 4" dies, Punch, o. b. i. No. 5, 6" stroke, Punch, gang, 32" bet. housings, Rolls, (3), 7" x"7", 6" x5" 6" x9" Shaper, 24" back geared. Shear, 42" gap, 52" squaring.

#### FOR SALE BY

#### B. L. Saltzman, 524-26 W. Van Buren St., Chicago, Ill.

Brake, power, 8' 12 ga. Drills, 14" to 32". Drills, 21" Baker hvy. duty No. 216. Drills, 22" Hamilton. Hole-Hog, Moline 6-spindle, No. 7. Horn press, Bliss, No.39, 14" stroke. Lathes, turret, Gishoit 21".

Lathes, turret, J. & L., lap; 2-1/16"; 2 spindle 3-1/16". a spindle 5-1/16". Lathes, Lo-swing, 7"x36" taper att. Punch press, No. 29-B Bliss o. b. i. Shear, sq. power, 54" Peerless 16 ga. Shear, sq. power, 42" Niagara 14 ga.

Motors, to 200 h. p., a. c. and d. c.

#### FOR SALE BY

#### Severin Machinery Corporation,

Bending roll, 14' Cleveland #" Bending roil, it Cieveland a Boring mill, Chicinnati 8' vertical. Boring mill, Sellers, 102". Boring mill, Bullard, 60". Boring mill, Bullard, 60". Boring mill, bullard, 60". Boring mill, hor. No. 31 Lucas, m.d. Grinder, 15A Byant chucking. Hammer, Beaudry, 250 lb. Hammer, Beaudry, 50 lb. Hammer, 5N Nazel, a. c. motor. Lathe, 48"x25'.

#### 30 Church St., New York, N. Y.

Mill, horiz , Fosdick 3" bar. Miller, No. 3B Brown & S., plain. Miller, 32"x12' Ingersoll 4 heads. Planer, 66"x66"x16' Pond. Planer openside, 36x36x10 D. & H. Saw, Laidlaw metal Thread miller, 49" P. & W.
Upsetters, 2-5" Ajax.
Upsetters, 2-5" National.
Upsetter, 2" Acme.
Upsetters, 2†" Acme.

#### FOR SALE BY

Randle Machinery Co., Air compressors, all sizes and types. Bending rolls, 12 'x1' cap. Niles, m. d. Bending rolls, 8 'x1' Xyerson. Bending rolls, 10 'x10 ga. Pexto m. d. Bending rolls, No. 3 Cleveland, belt. Beading machine. Quickwork univ. Boring mills, 24" to 96".

Bolt cutters, 1½" and 2".

Brake, No. 618 D. & K. 95% new.

Brake, 8' & 10'x10 ga. Ohl. Drills, all sizes and types.
Grinder, No. 14—20" Gardner.
Keyseaters, Davis & Catlin. Lathes, 42"x16' Niles quick change. Lathe, 66"x30' Putnam. Planer, 42x42x10 D. & H. openside. Press, No. 5 Bliss d. c. Press, No. 91B Toledo.

1733 Powers St., Cincinnati, Ohio

Press, No. 7M American m. d. Press, No. 4M American m. d. Press, No. 5 Am. Can incl. m. d. Press, Nos 1 & 4 Am. horning m.d. Pipe machine, 6" Landis m. d. Pipe machine, 3" Landis m. d. Press, No. 3" Excelsior 54" arch. pr. Press, No. 37 Excelsior 54" arch. pr. Shapers, all sizes.
Shear, No. 662 Niagara.
Shear, No. 662 Niagara.
Shear, No. 848 Niagara.
Shear, No. 848 Niagara.
Shear, No. 348 Niagara.
Shear, No. 34. & A. m. d.
Shear, No. 6 L. & A. universal.
Shear, Southwark rotary, No. 8 ga.
Turret lathe, 2x24 J. & L. m. d.
Welders, 100 to 309 amps.
Wheel lathe, 84" Niles m. d.
Wheel lathe, 84" Niles m. d.
Wheel lathe, 850 to 150 nose. Wheel press, 300 to 150 tons. Also many other bargains. Send us your inquiries.

#### FOR SALE BY

#### Wigglesworth Machinery Company

#### 170 Summer Street.

Blocks, Johansson blocks, like new. Blocks, Johansson blocks, like new. Borring mill, No. 35 Landis. Borring mill, No. 35 Landis. Borring mill, 36" Bullard New Era. Borring mill, 36" Bullard, rap. prod. Drill, 6 "Peruite radial. Drill, 8-spindle Pectors. Drill, 8-spindle Pectors. Grinder, No. 7 Gardner, like new. Grinder, No. 7 Blanchard, 60" chk. Grinder, No. 3 Blyant semi-auto. Grinder, No. 3 Bryant semi-auto.

Grinder, No. 3 Bryant semi-auto. hole.

hole.

Hammer, 2000 and 3000 lb. new board drop, 2 price.

Hammer, 6000 lb. Sellers, steam.

Lathes, Stark, Ames bench (4).

Lathe, 12"x5" Vernon.

Lathe, 14"x 6" Hendey. taper.

Miller, No. 2 B. Brown & S., m. d.

Miller, No. 2 Cincinnati universal.

Miller, 24" Cincinnati automatic.

Miller, 24" Cincinnati automatic.

Miller, 24" Cincinnati automatic.

Miller, 24" Cincinnati pricessil.

Miller, 24" Cincinnati pricessil.

slab.

Miller, 24"x12' Ingersoll slab. Planer, 60"x60"x16' Niles B. P. Planer, 72"x48"x12' Pond, motor. Planer, 84"x56"x16' Gray, 4 heads. Planer, 72"x60"x16' Detrick & Harvey open side, like new. Press, No. 4 Bliss-Con. geared. Press, No. 5 Bliss-Con. geared. Press, No. 66 Bliss-Con. geared. Press, No. E-51 Ferracute knuckle

Boston, Mass.

joint.
Press, No. 710-E Niagara.
Press, No. 93-B Toledo.
Press, No. 1884 Toledo toggle.
Scleroscope, Shore. Screw machine, No. 2G B. & S. Screw machine, No. 4 Warner &

Screw machine, No. 4 Warner & Swasey universal, geared head. Screw machine, 2½" Gridley, 4-spdl. Shaper, 16" Potter & Johnston. Shaper, 16" Sculd & Eberhardt. Shaper, 4" Stockbridge. Shaper, 24" Stockbridge. Slotter, 34" Newton.

#### FOR SALE BY

#### Strafer Machinery Company,

14th and Provost St., Jersey City, N. J.

BORING MILLS 100" Sellers s. p. d. rapid traverse. 96" Cincinnati s. p. d. rapid traverse. 84" Bullard belt drive.

72" Sellers rapid traverse, m. d. 51" N.-B.-P. single pulley drive, 24" Bullard side head.

GEAR CUTTERS No. 5A. Lees-Bradner a. c., m. d. No. 6 Cincinnati 60"x20" m. d. 6"x32" Norton, overhead counter. No. 8 Badger disc, 30" wheel. 16"x52" Landis self-contained. 16"x48" Landis crankshaft.

KEYSEATERS No. 5 Mitts & Merrill belt drive. No. 4 Mitts & Merrill extra equipt. LATHES

84"x40' Putnam modern, 42"x30' Pond cone type, 60"x21' Pond, t. g. 40"x22' Prentice, blocks and chucks, 42"-70"x16' Fay & Scott slide gap, 42"x36' Niles t. g. belt drive.

48"x48"x16' Pond 4 heads, b. d. 36" D. & H. open side 1-head.

Beading machine, Bliss.
Boring bars, portable, 4"x8'.
Caterpillar ditcher, B. & G. 24"x8'.
Chuck jaws set for boring mill.
Compressor, I.-R. 8"x6" horiz, m.d.

ES, 24'x18' Prentice g. h. 30'x18' Rahn-Larmon g. h., m. d. 42'x14' Bridgeford geared head. 24'x12' Lodge & Shipley. 16'x10' P. & W. geared head, t. a. 21'' Gisholt turret lathe. PLANERS

30"x30"x14' Whitcomb, 2-heads. 30"x30"x6' Powell 1-head. PRESSES

400 ton W. S. hydraulic 73"x20',
No. 3# Bliss double crank, 44",
No. 42 Bliss double crank, 32",
MISCELLANEOUS.

MISCELLANEOUS.

Compressor, C.P.T. Co. 54"x5" vert. Drill, Rockford right angle horis. Lathes, Oliver pattern, slide gap. Pipe machine, 6" Saunders with dies. Wire straightener, core. to 5/16".

#### FOR SALE BY

Interstate Machinery Co., -

Bending roll, 8'x pyramid. Bending roll, 6 xg initial.
Lathe, 32"x20" Boye & Emmes.
Lathe, 24"x22" Fitchburg.
Planer, 72"x48"x8" Niles 2 heads.
Punch, gang, bed 6' 6" 75 ton.

- 130 So. Clinton St., Chicago, Ill. Punch, s e., new Doty 14"x1" m. d. Ring & circle shear, 60" circles 10 ga. Shear, 11'x2/16" Niagara. Shears, 4" Marshalltown rotary. Spinning lathe, 22" Pryibil b. b. Welder, 35 k.w. Agnew-2 pcs. 1". 750 machines in stock. Send us your inquiries.

#### FOR SALE BY

The Jones Machine Tool Co., Bor. mill, No.32 G.& L. hor.,3" bar. Gear cutter, No.13 Brown & Sharpe. Gear culter, No.13 Borown & Snarpe, Gear hobber, No.12 Barber Colman, Grinder, surf., No. 1 Diamond m.d., Lathe, 18"x19' American s. p. d. Lathe, 18"x19' Hendey q. c. tie bar, Miller, No. 3 Cinti, high pwr., s. p. d. Our warehouse is full of bargains—Send for our list.

Front & Pike Sts., Cincinnati, Ohio Miller, No. 2 Cinti high power s. p. Miller, No. 2-M Cin., s. p d. plain.

#### FOR SALE BY

126-128 S. Clinton Street, Chicago, Ill. Clinton Machinery Co.,

Drills, 1, 2 & 4-sp. Leland & Gifford p.f.; 4-sp. Allen, 6-sp. Avey h.s b b. Grinders, No. 8 Besly 18" disc; No. 3 Abrasive surface m. d. Lathes, 14"x6' Hendeys & Am. t. a. Millers, No. 2 Ohio Veeflat overarm univ. s. p.d. compl. 98% new, No.18 B spec. K. & T. univ. dble. overarm s. p. d. complete; No. 2

Rockford univ. s. p. d. Presses, Nos. 1, 2, 3, 4, 5, & 6 o. b. i. Shapers, 16" Rockford s. p. d.; 20" Gould & Eberhardt s. p. d.; 15" Potter & Johnston univ. 90% new. Screw machine, No. 4 Warner & Swasey p. f. to turret and cut-off. Tappers, No. 2X Garvin auto.

#### FOR SALE BY

Brandt Machinery Company,

Brandt Machinery Company,
Boring mills, 44" & 34" Bullard-Maxi,
Boring mill, 64" & 54" Bullard-Maxi,
Boring mill, 64" & Bullard 2 heads,
Brake, 192 Bullard 2 heads,
Brake, 192 D. & K., Leat type,
Brake, 6" 34" D. & K., leat type,
Blandiosers, Nos. 2, 3, 4, 5, 26, 27, 29. 8.
Flanging machine, 4" McCabe,
Forging mch., 2" 4" McCabe,
Forging mch., 3" Aree, grind, ball,
Forging mch., 3" Aree, grind, ball,
Forging mch., 3" 4", 5", 7", Ajax,
Lathe, 18" K LeBlond, q. c.g., 3800,
Lathe, 40" 30" L. & S., g. h.
Lathe, 46" 30" L. & S. is speed, g.h.
Lathe, 18" Monarch, q. c. g.

50 Penn Ave., Pittsburgh, Pa.

Milling mche., No.2 Ohio, pl., cone. Milling mch., No.2 Ohio, pl., a.p.d. Press, No. 1884 Toledo, toggle. Press, No. 20 Bliss, 3f & 3 stroke. Press, No. 21 Bliss 3f & 4 stroke. Press, No. Bliss toggle. Press, No. Bliss toggle. Press, 24B Bliss toggle. Pipe bender, Cix type B, univ.
Shaper, 20" G & E., cone (hargain).
Shear, allig., Carlin 2"—12" blade.
Shear, allig., Canton No.2—17" blade
Shear, squaring, 10" x#" H. & J. Shear, squaring, 10'x14 ga. Bertsch. Thread roll, No. 50 Waterbury #". Thread roll, No. 40 Waterbury #". Tur.lathe, No.2 Acme univ. (bargain) Welder, 300 amp. arc, gaseng., bargain.

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Automatics, Nos. 9 & 00 B. & S. Grinder, 10"x36" Norton. Grinder, No. 10 B. & S. ext. Grinder, No. 23 Heald rotary surf. Hobbers, Nos. 3, 12-B & C

Lathe, No. 9 LeBlond multi-cut, Millers, Nos. 13-B Brown & Sharpe. Miller, No. 13-B Brown & S. prod. Radials, 3' Cincinnati Bickford. Turret lathe, No. 6 Warner & S.

Partial list; send us your inquiries.

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Miller, Nos. 2 & 3 Cincinnati plain.
Miller, No. 3 Sundstrand Rigidmil.
Miller, No. 3 Sundstrand Rigidmil.
Miller, No. 24 B K. & T. vertical.
Pipe mche., 6" Landis, 6" E. C. & B.
Planer, 16' Niles plate.

Planer, 23", 23", 5' Gray, Canego Planer, 36", 336", 14' Chandler, Press brake, 16'-6" Oh. 16 ga. cap. Presses, No. 168 B Consolidated gd. Presses, No. 19 and 21 B Bliss. Presses, No. 5 B Bliss-Consolid. o. b.i. Radial, 24" & 6' Am. 3" & 5' Cin-Bick Saws, 6"x6", 9", 9" Peerlers. Screw mchs., Nos. 5 & 6 Wood tilted Screw mchs., Nos. 5 & 6 Wood tilted Screw mchs., Nos. 5 & 6. Sapers, 30" O. 8 B. Sapers, 32" Columbia. Shapers, 32" Columbia. Shear, 42" Stoll, 16 ga. Shears, 62" & 10' Niagara 16 ga., m.d. Turret lathe, No. 1-B Foster chuck.

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28" Snyder sliding head upright,
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Grand Rapids twist drill 21". No. 13 B.& S. universal & tool, LATHES 30"x30' Fitchburg. 18"x 8' Springfield "Ideal". 13"x 5' Blount speed.

30"x30" Fitchious...
24"x16" LeBlond, q. c. g.
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16" Warner & Swasey, g. f. h.

No. 4 W. & S. grd. friction hd., 14"

MISCELLANEOUS. 3"x36" Jones & Lamson turret.

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Lathe, 18x6 Ryerson q. c. g., taper.

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34° Gisholt Vertical one turret head. 48° Colburn Vert. 2 sw. hds., late type. 60° Bullard Vertical 2 hds., S. P. D. 60° Niles Boring Mill, 2 heads. No. I Rockford, Horizontal 2° bar.

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Drills - Multiple

1-No. 2—2-spindle Avey Drill.
2—3-spindle Leland-Gifford, p. f.
2—2-spindle Leland-Gifford.
2—2-spindle Henry & Wright.
1—2-spindle Sipp.
1—Kingsbury 4-sp. Horiz, D.M.D.
1—No. 2 Edund High Speed.

-Pratt & Whitney 12-spindle. 1-No. 5 Fox.

Gear Cutters-Hobbers-Shapers -Fellows 36" 1-Brown & Sharpe No. 3-26". 2-No.6 G.& E.S. T.&B.T. Mult.

Grinders

I-Diamond No. I Univ. Tool & C. I-No. 99 W. & M. Univ. T.& C. I-Norton Tool and Cutter.

18-Norton Pl. Ext. 6x32 to 14x72. 5-Heald Int. No. 65. -Besly No. 14 Disc -Besly No. 6 Dbl. End. Auto.

1-Gardner Disc 2-Rivett No. 205 Radial. 1—Rivett Univ. No. 6 Internal. 2—Landis No. 3 Universal.

2—Landis 10x48 Crank Shaft. 3—Bryant Chuck. Nos. 6 & 15A. 1—Besly No. 17 double end.

Lathes - Engine - Miscellaneous 1-American 20x10 B. G. Q. C. 5—Lodge & Shipley | 6x6, | 8x8, | 2x10, B, C., C. |
2x10, B, C., C. |
2-LeBlond | 7x12, 2|x12, B, C. |
5-Greaves & Klusman | 18x6, |
8x8, 30x8, B, G., Q, C. |
-Chard 24x1 | B, G., Q, C. |
-L, & S. Duplex | 2x24 C, Pin, |
2-Sundstrand 9 Prod., | Motorized |
-Fitchburg 3/5x60 | Low Swing, |
-Putnam 26x12, |
-14x8 | Carroll & Jamieson, |
-Sidney | 4x6 B, G., Q, C, T, A, |
-Bradford 16 B, B, Q, C, T, A, |
-LeBlond Nos, 6 & 9 Muhi-cut. 5-Lodge & Shipley 16x6, 18x8,

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-Foster No. I-B-20" swing. -Gisholt No. 2, D. M. D.

2—Gisholt No. 2, D. M. D.
2—11 Gisholt.
1—3.A Warner & Swasey.
2—2.A Warner & Swasey.
2—Warner & Swasey No. 6,
1—Warner & Swasey No. 2.
2—Millholland 1\*x1\(\frac{9}{2}\) D. M. D.
2—Patt & Whitney 20".

Milling Machines-Vertical I-Knight No. 2 Vertical.

1-Becker No. I - Becker No. 5.

I - Bullard 42\* Boring.

Milling Machines-Horizontal

I – Milwaukee No. 1½B. I – Milwaukee No. 3B, d. o., v. h. I – LeBlond No. 4 Plain. I-Kempemith No. 2 Plain. I-No. 21 Brown & Sharpe, s.p.d. -11/2-B Brown & Sharpe.

-Steptoe Hand with Vert. Att. -Garvin No. 14. Standard Hand.

-Gooley & Edlund Type A 38. Presses-Punch

2-No. 14 Williams-White. -Consolidated No. 4 O. B. I I - Marshalltown No. 3 O. B. I. I - Bliss No. 2 O. B. I. 2 - Maxams Bench.

Planers

I-Cincinnati 42x36x161

Screw Machines-Automatic

4—Gridley ¾ 4-spindle. 1—¾ Gridley 4-spindle. 6—National Acme Nos. 51, 53 and 55 Multiple spindle. Millholland No. 2 Hand, Motor.

-Millholland 1%. Shapers

-American & Whipp 16 Crank. 1-Potter & Johnston 24" Crank. 2-Gould & Eberhardt 24" Crank.

Shears

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—Cincinnati Vert. Nos. 3, 4.
—Cincinnati Universal No. 2, 3, 4 48x24 N-B-Pond. 48" N-B-Pond Wheel. -42x39 Putnam. -42x28 N-B-Pond. -36x14 Bridgeford. -Milwaukee Pl. No. 1, † 2-B, 3-B.
-Milwaukee Vert. No. 2‡.
-Kempsmith Plain Nos. 2 3.
-Kempsmith Univ. Nos. 2, 3. -30x22' American. -30x12' American -24x12 Schumacher-Boye. 5—LeBloud Univ. Nos. 2, 2\frac{1}{2}, 3, 4. 2—Kuight No. 2, No. 3. 5—Becker No. SD, CS, 2, 5, 6, -21x10 LeBlond. -18x10 Lodge-Shipley.

**GEAR CUTTERS** -B-Coleman Nos. 3, 12. 4-B. & Sharpe Nos. 13, 3, 5. 2—Newark No. 2-B. 2—G. & E. Nos. 18-H, 12-H. 9—Gleasons, 6, 11, 15, 18, 24, 77".

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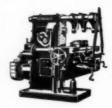
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